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R-31-5-4-13
DD-1-SOP-F

SITE OPERATIONS PLAN

DOUGLASSVILLE DISPOSAL SITE
UNION TOWNSHIP
BERKS COUNTY, PENNSYLVANIA

EPA WORK ASSIGNMENT
NUMBER 59-3L51
CONTRACT NUMBER 68-01-6699

NUS PROJECT NO. S779 (0779.11)

OCTOBER 1984

AR300191

NUS CORPORATION

Park West Two
Cliff Mine Road
Pittsburgh, PA 15275
412-788-1080

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SUBMITTED FOR NUS BY:

GEORGE GARTSEFF
PROJECT MANAGER

APPROVED:

DONALD SENOVICH
MANAGER, REMEDIAL PLANNING

NUS CORPORATION

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R-31-5-4-13

October 22, 1984

Project No. S779 (0779.11)

Mr. Richard Zambito
U. S. Environmental Protection Agency
Region III
Curtis Building
Philadelphia, Pennsylvania 19106

Subject: Final Site Operations Plan for Douglassville Disposal Site
EPA Work Assignment No. 59-3L51

Dear Mr. Zambito:

Enclosed please find three (3) copies of the final Site Operations Plan for the Douglassville Disposal Site in Union Township, Pennsylvania. These copies have been numbered DD-1-SOP-F through DD-3-SOP-F as part of the NUS Corporation Quality Assurance Program. In addition, one (1) copy of the final Site Operations Plan numbered DD-4-SOP-F has been submitted to Ms. Linda Boornazian at EPA Headquarters.

If you have any questions or comments regarding this submittal, please feel free to contact Mr. George Gartseff of our staff at 301/258-8566.

Very truly yours,

Donald Senovich

Donald Senovich
Manager, Remedial Planning

DS/lmn
Enclosures (3)

cc: Ms. Linda Boornazian, EPA Headquarters
Mr. William M. Kaschak, EPA Headquarters
Mr. Ferdas, EPA Region III

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1.0 INTRODUCTION

This Site Operations Plan is intended to be used as a working document when onsite activities need to be performed. This is a dynamic document which will require modifications as the RI (Field Phase) is implemented.

It details the types of samples to be taken, the number of samples to be taken, the location where the samples will be taken, sampling methods for different media, and decontamination procedures.

Well development and soil borings are also discussed. Health and Safety Requirements as well as Quality Assurance Requirements are included for each task.

This plan should be consulted frequently.

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2.0 SAMPLING AND ANALYSIS REQUIREMENTS

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2.1 Introduction

Extensive sampling will be conducted at the Douglassville Disposal Site in order to define the character and extent of contamination of soils, sediment, and groundwater and to determine the nature of wastes left on site. The purpose of this section of the Plan is to detail procedures for collecting, handling, preserving, and shipping of all samples taken at the site.

2.2 Sample Handling

Specific procedures for collecting all types of samples are detailed in Section 2.5. Bottles needed for each sample type will be determined on the basis of the analysis to be performed. If samples are to be analyzed through the Contract Laboratory Program (CLP), the Sample Management Office (SMO) guidelines, as outlined in Table 2-1, will be used to determine what bottles are needed. The SMO will also dictate the preservative to be used. Bottles should be ordered through Mr. Ronald Burd of NUS at least two weeks prior to any sampling activity.

When analyses are required, Mr. Ronald Burd of NUS - Superfund Division or his designee will contact Mr. Daniel Donnelly of EPA Region III, Environmental Services Division, who will in turn contact SMO to access the CLP system. Non-CLP analytical arrangements will also be handled through Mr. Burd.

After each sample is collected, the handling steps will be:

- Label the sample by completing and affixing an NUS Corporation sample label.

- Add preservatives, as needed. (Groundwater samples to be analyzed for metals will be filtered before preservatives are added.)

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TABLE 2-1

BOTTLE AND PRESERVATIVE REQUIREMENTS

Medium	Analysis	Bottle(s)	Preservative
Water, aqueous	GC/MS-extractable compounds	1/2 gal. glass jug (2)	None
	GC/MS-volatile organics	40 ml VOA bottles (2)	None
	Petroleum hydrocarbons	1 l glass amber (1)	HCl, pH < 2
	COD/TOC	500 ml plastic (1)	H_2SO_4, pH < 2
	SO_4, Cl, NO_3, TDS, CO_3, HCO_3	1 l plastic (1)	None
	Ca, Mg, Na, K	500 ml plastic (1)*	HNO_3, pH < 2
	Metals	1 l plastic (1)	HNO_3, pH < 2
Soil, sediment	Organics	8 oz. glass (1)	None
	Metals	8 oz. glass (1)	None
	Petroleum hydrocarbons	8 oz. glass (1)*	None
	EP Toxicity	8 oz. glass (1)	None
	BTU content, ash content	8 oz. glass (1)	None
Tank			
wipe	Organics	8 oz. glass (1)	None
waste	Organics, metals	8 oz. glass (1)	None
	Incineration parameters	16 oz. glass (1)	None

* A separate bottle is needed only if these analyses are to be performed at a different laboratory than the metals analysis.

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- Mark the fill level on the bottle with indelible ink.
- Fill out the required sample documentation.
- Seal the sample bottle inside a water-tight plastic bag.
- Pack samples for shipping.

Samples will be divided into two (2) categories: Environmental samples and hazardous samples. Environmental samples (low concentration) will be stored in coolers immediately after collection. Vermiculite (or equivalent) will be used as a packing material because it is light, absorbent, inert, and absorbs shocks well. Water-tight bags of ice will also be kept in the coolers to chill the environmental samples.

Hazardous samples (high and medium concentrations) will be packed in metal cans which will then be filled with vermiculite. The can lids will be affixed with metal clips or tape. Packaging is the same as for environmental samples except that no ice is needed. Department of Transportation regulations will be used to determine the proper shipping classification and labeling.

All environmental samples to be sent to contract laboratories will be shipped via air freight within 24 hours of collection, preferably on the same day as the samples are collected. Hazardous samples will be shipped to the laboratory as soon as is convenient, preferably within 24 hours of collection.

Samples sent to a subcontract laboratory will be shipped via air freight or hand-delivered, if this is possible, within the same time frame as stated for CLP samples.

If samples are shipped to a contract laboratory, Leslie Braun or Roch Mongeon must be contacted at SMO (703/557-2490) immediately after shipment. Reported will be the:

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- Date the samples were shipped
- Air bill numbers
- Name of Laboratory
- Number and type of samples
- SMO case number or Special Analytical Service (SAS) number

2.3 Quality Assurance and Documentation

EPA-approved quality assurance procedures will be used for all collected samples. One duplicate sample (per type) will be taken for every 20 sampling locations. If less than 20 of a particular type of sample are collected, one mandatory duplicate will be collected. A field blank will be prepared for each set of samples collected, with the exception of tank waste samples.

In order to identify and track each sample through shipping and CLP analysis, the following documents will be prepared:

- Sample labels (one for each sample bottle)
- Traffic Report Forms (Organic/Inorganic/High Hazard, as applicable for each sample)
- Chain-of-Custody Forms (one for each container of samples shipped)
- Custody Seals (as required for each container of samples shipped, to be affixed to the container in a way such that it cannot be opened without breaking the seal)
- Airbills (one for each sample shipment to an individual laboratory)

The sampler is to retain the pink and the white copy of the Traffic Reports, and the pink copy of the Chain-of-Custody forms. The other copies are to be sealed in a waterproof bag and taped to the inside of the cooler lid.

If the sample is to be analyzed by a subcontract laboratory, Traffic Report forms will not be needed.

Further Quality Assurance details are provided in Chapter 3.0, Site-Specific Quality Assurance Requirements.

2.4 Sample Numbering System

All samples will be numbered according to the following system:

SW - Sample Type - Station Number (Date, optional)

Sample Type and Station Number for each sample are specified in Section 2.5. Date is optional, and may be used for points which are sampled more than once, such as monitoring wells.

EXAMPLE: A groundwater sample from a monitoring well, collected on October 10, 1983, would be designated: SW-MW-001 (10/10/83)

2.5 Specific Sampling Procedures

2.5.1 Groundwater Samples

2.5.1.1 Domestic Wells

Objective

The domestic well sampling program will determine if contaminants are infiltrating any local drinking water wells.

Sample Designation

The sample code for the domestic well samples is DW. Sample numbers for the first round of sampling will start with 001 and progress arithmetically to the highest number needed. If a second round of sampling is needed, sample numbers will start with 101 and proceed as with the first round.

Sampling Method

1. Obtain the well depth, casing size, and holding tank volume. Calculate the volume of water in the system as follows:

   Well volume (gallons) = π x (radius of well casing in ft)^2 x (feet of water standing in the well) x (7.48 gallons/ft^3)

   Total water volume (gallons) = well volume + holding tank volume

2. If a tap is available between the well head and the holding tank, purge three well volumes from the system. If no tap is available, purge the total water volume calculated above from the system plus two well volumes. If information concerning well depth or holding tank volume is not available, purge the well for 30 minutes.

   NOTE: When purging from an outside tap, route the water away from the house or to a drain using a garden hose.

3. Collect the sample from the tap closest to the well head, before the water is processed through any water-treatment devices. If it is not possible to sample before a treatment device, collect the sample after treatment; note this and the pipe material between the well and sampling point in the sample logbook. Do not take the sample from the garden hose used to route the water away from the house.

NOTE: Some well owners may be reluctant to allow their water to run for the periods of time involved in purging three well volumes. Community relations considerations must be weighed against the need to obtain a representative sample, with the sampler having to make a judgment as to what actions should be taken.

4. Filter each well sample, (metals analyses only) through a 0.45 micron membrane filter. Add the proper preservatives after filtration.

Number and Location of Sampling Points

It is anticipated that ten wells will be sampled. The exact wells to be sampled will be determined, following completion of the domestic well identification task.

Anticipated Concentration Level

Environmental/low.

Sampling Equipment

Garden hose, 100 feet, with proper connectors.

Analytical Parameters

Domestic well samples will be analyzed for the following parameters:

- pH (field measurement)
- Conductivity (field measurement)

All samples will be analyzed for the following Interim Primary and Secondary Drinking Water Standards, and for organic chemical substances designated in the EPA Contract Laboratory Program Hazardous Substances List.

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- Interim Primary Drinking Water Standards
  - Arsenic, Barium, Cadmium, Chromium (total and hexavalent), Lead, Mercury, Nitrate (as N), Selenium, Silver, Turbidity, and Coliform Bacteria

- Interim Secondary Drinking Water Standards
  - Chloride, Color, Copper, Corrosivity, Foaming Agents, Iron, Manganese, Odor, Sulfate, Total Dissolved Solids (TDS), and Zinc.

- Hazardous Substance List (HSL) (Organics only) - Volatile and Extractable Organics, Pesticides, PCBs and Dioxin

Decontamination

None required.

Special Instructions

An EPA representative or PADER representative will accompany NUS personnel, if possible, to handle community relations. The well data sheet will be completed, including the name and address of the well owner.

2.5.1.2 Monitoring Wells

Objective

The proposed monitoring wells will be sampled to determine the magnitude and extent of contamination on the Douglassville Disposal Site. Water levels will be taken at the time of sampling in each well to determine groundwater flow directions and to help delineate migrating plumes of contamination.

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Sample Designation

The sample code for the monitoring well samples is MW. Sample numbers for the first round of sampling will start with 001 and progress arithmetically to the highest number needed. The second round sample numbers will begin with 101, the third round with 201, and so on.

Sampling Method

1. Remove the well cap and measure the volatile organic concentration using an Organic Vapor Meter (OVM).

2. Measure the water level in the well using an M-scope or equivalent device, and record the elevation at the top of the water surface with respect to the top of the well casing.

3. Determine the submerged casing volume (standing water volume) in the well from the following equation:

$$V = \pi r^2 h(7.48)$$

where:

V = volume in gallons
r = radius in feet (inside well casing)
h = standing water height in feet as determined from drilling logs and actual measurement

4. With a manual bailer, remove three casing volumes of water from the well or bail the well dry. Bail the well from the top so that standing water is definitely removed. To avoid disturbing the sediment, do not insert the bailer to the bottom of the screen. (NOTE: If the casing size allows, the well may be pumped with a submersible electric pump or other device until the appropriate volume has been removed. Do not overpump.)

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5. When the well has recharged sufficiently, remove enough water to fill all the sample bottles. In the event that the recovery time of the well is very slow (e.g., 24 hours), sample collection can be delayed until the following day. If the well has been bailed early in the morning, sufficient water may be standing in the well by the end of the day to allow sample collection. If the well is incapable of producing a sufficient volume of sample at any time, take the largest quantity available and record this in the logbook.

6. Replace the well cap. Make sure the well is readily identifiable as the source of the sample.

7. Filter each well sample (metal analyses only) through a 0.45 micron membrane filter. Add the proper preservatives after filtration.

Number and Location of Sampling Points

Twenty-two proposed wells and three existing wells will be sampled. Proposed well locations are shown in Figure 2-1.

Anticipated Concentration Level

Environmental/low

Sampling Equipment

- Bailer, stainless steel with neoprene check valve
- Winch
- Stainless steel cable
- Sampling pump and power source

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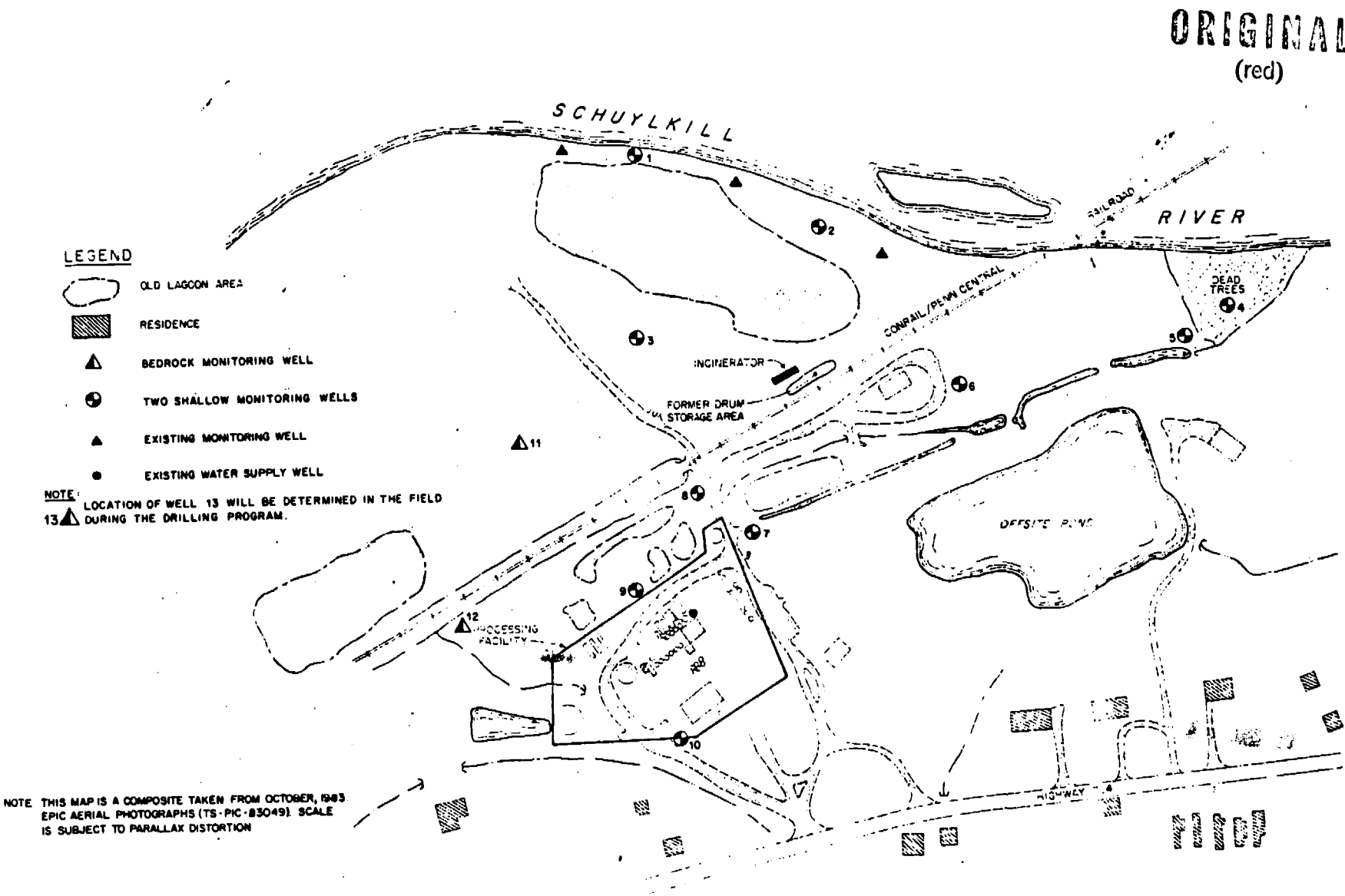

FIGURE 2-1

EXISTING AND PROPOSED WELL LOCATIONS
DOUGLASSVILLE D[illegible]SAL SITE, UNION TWP, PA
SCALE [illegible]' APPROX

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- Safety lines, piping, etc.
- Water level measuring device
- Filtering equipment

Analytical Parameters

All samples will be analyzed for HSL organics, HSL inorganics (Tasks I & II), oil and grease, and petroleum hydrocarbons. A second round of sampling and analysis may be implemented pending first round results. Analytical parameters may change following evaluation of previous sampling round results. Temperature, pH, acidity/alkalinity, and specific conductance will be measured in the field.

Decontamination

Each stainless steel, closed-top bailer will be laboratory cleaned and packaged before shipment to the site as follows:

1. Wash the bailer with a mild soap solution and bailer brush
2. Rinse the bailer thoroughly with de-ionized (D.I.) water
3. Wash the bailer with hexane.
4. Rinse the bailer thoroughly with D.I. water.

2.5.2 Surface and Ponded Water

Objective

Surface water and ponded water samples will be collected from appropriate locations, to be determined after the surficial soil contamination has been defined, to evaluate the impacts from leakage and or drainage.

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Sample Designation

The sample code for ponded liquid samples is PL and SW for surface water samples. Sample numbers will start with 001 and progress arithmetically to the highest number needed.

Sampling Methods (Surface Water)

All sampling points are to be staked and located by field measurement (tape) from a baseline installed by surveying. All pertinent observations that provide insight into the nature of the sample will be recorded in the sampling log book.

All surface water samples will be collected using a stainless steel bucket. The bucket will be properly decontaminated between samples.

Sample containers, labeling and sealing are to be used described in the previous section relating to groundwater sampling.

Sampling Methods (Ponded Water)

Samples will be collected near the edges of any ponded area. A small stainless steel container or dipper attached to a ten-foot pole will be used to obtain the samples. Samples from various locations and depths (for each pond) will be composited. Approximate sampling points will be identified on a sketch of the ponded area. The following procedure is used:

1. Record available information for the ponded liquid such as its size, location, depth, and probable contents in the field logbook and on the sample log sheet.

2. Take samples from the edge of the ponded liquid and transfer them to appropriate bottles. Record the sample points on a sketch of the ponded liquid.

3. Secure the lid of each sample bottle and attach a label containing sample identification.

Number and Location of Sampling Points

Approximately ten surface water liquid samples will be collected. Number of ponded water samples will be determined by field conditions.

Specific sampling locations include: the Schuylkill River, immediately upstream and downstream of the site and at any intermediate discharge points (into the river); at the oil/water separator (influent and effluent); low-lying ponded waters; and the drainage ditch.

Anticipated Concentration Level

Low concentration

Sampling Equipment

Pond dip sampler
Stainless steel buckets

Analytical Parameters

All samples will be analyzed for HSL organics, HSL inorganics (Tasks I & II), petroleum hydrocarbons, TDS, oil and grease, ammonia, MBAS, and acidity/alkalinity.

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Decontamination

Equipment decontamination between samples will be as follows:

1. If the sampling equipment is heavily contaminated with organics, it will be cleaned with hexane, followed by a D.I. water rinse, a mild soap solution wash, and a final D.I. water rinse.

2. If the major source of contamination is inorganic in nature, it will be cleaned with a mild soap solution, followed by a D.I. water rinse, a hexane wash, and a final D.I. water rinse.

3. The decontamination procedure may be modified, as necessary, prior to or during the sampling.

After use, the dip samplers can be given a field decontamination consisting of soap water wash and tap water rinse. A more thorough decontamination procedure will be performed after return to NUS.

Special Instructions

None

2.5.3 Soil Sampling

2.5.3.1 Surface Soil

Objective

Surface soils and sediment samples will be collected to help define the extent of contaminated soils.

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Sample Designation

The sample code for the surface soil samples is SO. Sample numbers will start with 001 and progress arithmetically to the highest number needed.

Sampling Method

1. Using a scoop or trowel, fill an eight-ounce glass jar with sample. Sample approximately the top six inches of soil.

2. Attach an identifying label to the bottle.

3. Mark the location with a numbered stake if possible and locate the sample point on a sketch of the site.

Number and Location of Sampling Points

Approximatley fourteen surface soil sampling locations will be selected. Other samples may be taken as judged necessary by the sampling team.

Anticipated Concentration Level

Low concentration samples will probably be encountered.

Sampling Equipment

A shovel or trowel.

Analytical Parameters

All samples will be analyzed for HSL organics, HSL inorganics (Tasks I & II); and petroleum hydrocarbons, oil and grease, ammonia and MBAS.

Decontamination

Equipment decontamination is as follows:

1. Wash the trowel or shovel with a mild soap solution and brush.
2. Rinse the trowel or shovel thoroughly with D.I. water.
3. Wash the trowel or shovel with hexane.
4. Rinse the trowel or shovel thoroughly with D.I. water.

Sampling equipment will be decontaminated between each sample point.

Special Instructions

None

2.5.3.2 Subsurface Soil

Objective

Subsurface soil samples will be collected in the lagoon area to define the vertical extent of contaminated soil and the near-surface geologic conditions.

Sample Designation

The sample code for the subsurface soil samples is SS. Sample numbers will start with 001 and progress arithmetically to the highest number needed.

Sampling Method

Each soil boring will be augered to a depth not to exceed two feet of undisturbed soils, and the soil will be sampled continuously. Standard penetration split-barrel samples will be collected from alternate two-foot intervals, i.e.: one to three feet, five to seven feet, nine to eleven feet, etc., to the maximum depth determined in

the field. Visual inspection, OVM reading, and the Site Geologist's discretion will be used to determine which of these samples will be set for analysis.

Please note that this procedure does not detail how to use a split-barrel sampler. ASTM procedure D-1586-67 (reapproved 1974) must be consulted for split-barrel soil sampling techniques. The following steps will be performed once the split-barrel sampler has been removed from the ground.

1. Prepare a representative soil sample by selecting three equal increments of soil from the length of the split-spoon.

2. Transfer the sample to the appropriate bottles using a trowel or other appropriate implement.

3. Attach an identifying label to the bottle.

4. Mark the location with a numbered stake if possible and locate the sample on a sketch of the site.

Number and Location of Sampling Points

Approximately twenty soil borings are expected to be drilled. On this basis, at least eighty soil samples will be collected for analysis.

Anticipated Concentration Levels

Low concentration samples are expected.

Sampling Equipment

Drill rig with split-barrel sampler.

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Analytical Parameters

All the subsurface soil samples will be analyzed for HSL organics, HSL inorganics (Tasks I & II); and petroleum hydrocarbons, oil and grease, ammonia and MBAS. OVM readings will be taken for each split-barrel sample. Alkalinity/acidity and pH will be measured in the field.

Decontamination

The split-barrel sample will be decontaminated as follows just prior to taking an analytical sample:

1. Wash the sampler with a mild detergent solution.
2. Rinse the sampler thoroughly with D.I. water.
3. Wash the sampler with hexane.
4. Rinse the sampler thoroughly with D.I. water.

Split barrel samplers need not be decontaminated between samples being taken only for description by the geologist.

The drill rig must be decontaminated between borings by cleaning with high pressure steam to remove mud, soils and surface contaminants.

Special Instructions

Each split-barrel sample will be described by the geologist and monitored with an OVM to detect volatile organics. The need for respiratory protection will be determined by the OVM results.

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2.5.4 Tank Sampling

2.5.4.1 Tank Contents

Objective

Residual materials may be contained in the abandoned storage tank. If a tank is empty, representative wipe samples from the inside surface will be collected.

Sample Designation

The sample code for tank content samples is TK. Wipe samples and waste samples will use this designation. Sample numbers will start with 001 and progress arithmetically to the highest number needed.

Sampling Method

For tank liquid sampling:

1. Record the tank's condition, markings, opening or valve types, and approximate size in gallons in the field logbook and on the sample log sheet. Note the tank location on the site sketch.

2. Attach an identification number to the tank using a stencil or weatherproof tag. Number succeeding tanks consecutively. Record the numbers in the logbook.

3. If possible, determine tank content stratification by inserting a long plastic or glass tube sampler, withdrawing it, and examining the tube contents.

4. Samples of stratified contents can be taken with a bomb or weighted bottle sampler at each level. A segmented tube sampler may also be used

if available. If the contents are stratified, deliver samples of each layer to separate eight-ounce glass sample jars. If there is no stratification a single sample will suffice.

5. Secure the jar lid and attach an identifying tag or label to the bottle.

For tank wipe sampling:

1. Wear at least two layers of clean, chemical-protective, disposable gloves, remove a Whatman #42 filter paper from the box.

   NOTE: A new pair of gloves will be used for each tank.

2. Moisten the filter paper with hexane. A wash bottle will be used for this operation.

3. Beginning at one end of the tank, wipe an area of approximately 100 square centimeters.

4. Without allowing the filter to contact any other contaminated surface, fold it with the exposed side in and place it in a clean sample jar.

5. Continue Steps 2 through 4 over different areas of the tank until a representative sample (minimum of five wipes) of the entire tank has been obtained. Put all the filter papers in one jar.

6. Moisten a blank filter with hexane, place it in a separate jar, and submit it to the lab for analysis as a field blank. One blank is submitted per sampling round.

7. Record the type of surface sampled, a qualitative estimate of the roughness (smooth, rough, very rough), and the number of wipes taken per tank.

Number and Location of Sampling Points

One abandoned storage tank will be sampled and any additionally designated tanks no longer in use (up to fourteen total). A sludge and water sample (if present) will be collected for analysis.

Anticipated Concentration Level

Hazardous/high

Sampling Equipment

Pump
Tubing
Weighted grab sampler
Tube sampler
Whatman #42 filter paper
Hexane

Analytical Parameters

All tank content samples will be analyzed for HSL organics, HSL inorganics, pH (1:1 water mixture for organic samples), suspended solids, dissolved solids, sulfur content, halogen content, moisture content. Aqueous samples should also be analyzed for TOC and acidity.

Decontamination

Nondisposable sampling equipment will be decontaminated as follows:

1. If the sampling equipment is heavily contaminated with organics, it will be cleaned with hexane, followed by a D.I. water rinse, a mild soap solution wash, and a final D.I. water rinse.

2. If the major source of contamination is inorganic in nature, it will be cleaned with a mild soap solution, followed by a D.I. water rinse, a hexane wash, and a final D.I. water rinse.

3. The decontamination procedure may be modified, as necessary, prior to or during the actual tank sampling to conform with site conditions.

Special Instructions

Consult the Health and Safety Plan for task-specific requirements prior to commencing sampling.

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3.0 SITE-SPECIFIC QUALITY ASSURANCE REQUIREMENTS

3.1 Introduction

The quality assurance program employed in this Remedial Investigation is based on protocols and procedures detailed in the NUS Corporation's Superfund Division Quality Assurance Manual. Guidance contained in the manual is applied as required by site-specific characteristics. The entire quality assurance manual is applicable to the work to be performed. This site-specific plan may be modified by data collected during the Remedial Investigation.

This program complies with the EPA quality assurance requirements specified in the contract and is related to monitoring and measurement activities. It encompasses all project activity that may affect the quality of work.

3.2 Project Organization

The Project Manager, Mr. George Gartseff, will be responsible for all project activities. Key project disciplines are identified as: Team Leader, Environmental Engineer, Hydrogeologist, Site Safety Officer, Sampling Technician, and Quality Assurance Representative. Specific people to fill these positions will be determined at a later date.

In carrying out his duties, the quality assurance representative will have access to all work areas, provided he has the required safety training. He shall have the freedom to: identify quality problems; initiate, recommend, or provide solutions to quality problems through designated channels; verify implementation of solutions; ensure that further processing or action is controlled until proper disposition of unsatisfactory conditions has occurred. Quality assurance personnel shall have access to NUS corporate management, at any level required, to resolve problems or coordinate quality concerns.

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3.3 Quality Assurance Objectives

The objectives of this site-specific project Quality Assurance Plan are as follows:

- To maintain evidentiary value of the data produced
- To ensure integrity of results of the Remedial Investigation, laboratory analyses, and technical reports
- To provide assurance that remedial designs and assessments are properly prepared and reviewed
- To control the activity of subcontractors, consultants, and support agencies so that they maintain the same quality standards that are required by NUS
- To produce a product (report) that is uniform and of acceptable quality to achieve the purpose of the project

3.4 Quality Assurance Training

As outlined in the Quality Assurance Manual (QAP 2.3), training will be provided to all project personnel responsible for activities that may affect the quality of the project work. This training will be implemented in accordance with the described procedure (QAP 2.3, Section 6.0).

3.5 Standard Operating Procedures

Activities requiring procedures for use in the field which require definition and/or QA oversight are listed in Table 3-1. Where applicable, all field and laboratory procedures will be referenced to standard procedures established by EPA, ASTM, or equipment manufacturers. Where published standards are not used, standard NUS procedures are outlined or referenced.

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TABLE 3-1

LIST OF ACTIVITIES REQUIRING QA PROCEDURES AND/OR QA OVERSITE

Activity	Applicable QA Procedure
Project Management:	
Project Work Plan	QAP 2.5 (Sec. 6.3-6.5)
Task Work Plans	QAP 2.5
Data Acquisition:	
Site Inspections	QAR 11.0, QAP 11.1 and 11.2
Field Data Collection	QAP 4.1
Land Surveying (Topographic Map and Boring Locations)	
Soil Borings/Well Installation	OG 4.9
Preparation of Water Table Maps	OG 4.14
Determination of Groundwater Network	OG 4.14
Water Level Measurements	OG 4.10
Ambient Air Sampling	OG 4.29 (Sec. 4.4.1)
Sampling:	
Tap Water Sampling (Residential Wells)	OG 4.8, OG 4.29 (Sec. 4.4.1)
Groundwater Sampling (Monitoring Wells)	OG 4.7, OG 4.29 (Sec. 4.4.1)
Soil/Sediment Sampling	OG 4.29 (Sec. 4.4.1)
Tank Sampling	OG 4.29 (Sec. 4.4.2)

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TABLE 3-1
LIST OF ACTIVITIES REQUIRING QA PROCEDURES AND/OR QA OVERSITE
PAGE TWO

Activity	Applicable QA Procedure
Sample Packaging and Preservation	QAR 13.0, QAP 13.1, OG 4.19
Sample Documentation and Tagging	QAR 13.0, QAP 13.1, OG 4.29 (Sec. 4.5)
Sample Chain of Custody Requirements	OG 4.18
Sample Shipping and Laboratory Receipt Requirements	OG 4.19
Field Analysis	OG 4.21, 4.40, 4.41
Laboratory Analyses:	
Analytical Procedures	QAR 10.0, QAP 10.1
Data Reduction, Validation, and Reporting	OG 4.2
Internal QC Checks	OG 4.1
Health and Safety Monitoring:	
Ambient Air Monitoring (OVA, HNU, Explosimeter, and Oxygen Deficiency)	OG 4.29 (Sec. 4.4.1, page 3), 5.4, 5.5
Decontamination Procedures	OG 5.3
Product Quality Assurance:	
Remedial Investigation Report	QAP 7.4
Illustrations and Drawings	QAR 3.0
Photos and Reproductions	QAR 11.1 (Section 6.6)
Document Control	QAR 7.0 (QAP 7.1, QAP 7.2)

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TABLE 3-1
LIST OF ACTIVITIES REQUIRING QA PROCEDURES AND/OR QA OVERSITE
PAGE THREE

Activity	Applicable QA Procedure
Subcontractor Requirements:	
Procurement Document Control	QAR 5.0, QAP 5.1
Preparation of Procurement Documents	QAP 5.1
Subcontractor QA Requirements	QAP 5.2
Selection of Subcontractors	QAP 8.2

QARs and QAPs appear in the NUS Quality Assurance Manual
OGs appear in the NUS Operating Guidelines Manual

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3.5.1 Project Work Plan

Controls for the preparation and use of the Project Work Plan are established by QAP 2.5. The elements to be addressed by the QA/QC plan are listed in QAP 2.5 (Attachment A, Page A-4), as follows:

1. Sampling procedures.
2. Sample custody.
3. Calibration procedures and frequency.
4. Data acquisition.
5. Data reduction, validation, and reporting.
6. Internal quality control checks and frequency.
7. Performance and system audits.
8. Preventive maintenance.
9. Data precision, accuracy, and completeness.
10. Corrective action.
11. Quality assurance reports to management.

A site-specific Health and Safety Plan is required as an integral element of the project Work Plan.

Review and approval (internal) procedures for the Work Plan are detailed in QAP 2.5, Section 6.5 (Page 3).

3.5.2 Data Acquisition Activities

There are a number of tasks (or activities) to be performed for completion of the Remedial Investigation, which require the acquisition of data. All of these activities must be carried out with quality assurance in mind. Chronologically, they include:

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1. Background data.

2. Site reconnaissance.

3. Land surveying for topographic map generation and exact location of test borings and monitoring wells.

4. Soil borings/monitoring well installation.

5. Water level measurement.

6. Preparation of water table maps and groundwater network definition.

3.5.2.1 Background Data Acquisition

Acquisition of background data characterizing the site is required and is generally described in the Work Plan as Task 4 on Page 3-3.

Quality assurance requirements relating to the acquisition of background data are contained in the NUS Quality Assurance Manual in Section QAR 11.0 under Inspections. QAP 11.1, which describes the quality assurance protocol for offsite reconnaissance, contains the relevant procedures regarding:

1. Information sources, Section 6.2.

2. Review of the information, Section 6.3.

3. Protection of evidentiary value of the background information, Section 6.3.

4. Offsite sample requirements, Section 6.5.

5. Photographs, Section 6.6.

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6. Sketch maps, Section 6.7.

7. Exposed soil and rocks, Section 6.8.

8. Final report, Section 6.9.

9. Records required, Section 7.0.

3.5.2.2 Site Reconnaissance

The specific objectives of this task are described on Page 3-3 of the Work Plan. Basic quality assurance requirements and procedures for the site reconnaissance are covered in the NUS Quality Assurance Manual under QAP 11.2 (Onsite Inspections) and QAP 4.1 (Field Data Collection).

Health and Safety monitoring procedures are presented in NUS Operating Guidelines Manual by the following OGs.

- OG 4.29 (Section 4.4.1, page 3) Ambient air monitoring to establish the proper level of personnel protection
- OG 5.3 Decontamination procedures
- OG 4.23 Identification of test equipment requiring calibration
- OG 4.25 Instrument maintenance

All of the applicable sample collection, packaging and preservation, documentation and tagging, and custody protocols are listed in Table 3-1 and presented in Sections 3.5.4 and 3.5.5 of this plan which refers to sampling and analysis.

Data reporting and reduction is covered by the following OGs and QAPs:

- OG 4.2 Data reduction and reporting
- QAP 7.1, QAP 7.2 Document control
- OG 4.1 Internal quality control checks
- QAR 4.0, QAR 7.0 Data acquisition and document control

The information gained during the site reconnaissance will be used to update the Site Operations Plan.

3.5.2.3 Surveying

Ground surveying is required to provide ground control for a site topographic map and to locate exactly the test borings and monitoring wells established in the test drilling program. General requirements are described in the Work Plan on Page 3-9.

Applicable QA standards for the accomplishment of the above work to provide the required quality assurance are:

- QAR 4.0, QAP 4.1, QAP 4.2, Data acquisition
- QAR 7.0 Document control
- QAR 12.0, QAP 12.1, OG 4.23 Control of measuring equipment
- QAR 16.0 Quality assurance records

3.5.2.4 Soil Borings and Monitoring Well Development

The drilling program, as it was originally envisioned, is described in the Work Plan starting on Page 3-14. The technical section of the drilling specifications provide greater detail of the actual drilling program to be implemented. Following installation, several hydraulic tests may be performed on the wells. All of the available data will then be used in the preparation of the necessary underground maps.

Quality assurance aspects of this activity are generally covered by the following QARs, QAPs, and OGs:

- QAP 2.5 Preparation of a Task Work Plan
- QAP 6.1 Preparation and/or selection of available procedures
- QAR 4.0, QAP 4.1, QAP 4.2 Data acquisition (general)
- QAR 7.0, QAP 7.1, QAP 7.2 Document control (general)
- QAR 16.0 Quality Assurance records
- OG 4.2 Data reduction and reporting (general)
- QAR 5.0, QAP 5.1 Procurement document preparation and control
- QAP 5.2 Subcontractor quality assurance requirements
- OG 4.37 Subsurface sampling and test boring
- OG 4.14 Preparation of water table maps
- OG 4.14 Determination of groundwater network
- OG 4.10 Water table measurements
- OG 4.9 Groundwater Monitoring Well Installation

3.5.2.5 Ambient Air Sampling

Ambient air will be sampled for volatile organic constituents if it is necessary to further determine the health and safety requirements or to define public health and environmental risks at the site.

Quality assurance aspects of this data acquisition task are covered by the following QARs, QAPs, and OGs:

- QAP 2.5 Preparation of a Task Work Plan
- QAP 6.1 Preparation and/or selection of available procedures
- QAR 4.0, QAP 4.1, QAP 4.2 Data acquisition (general)
- QAR 7.0, QAP 7.1, QAP 7.2 Document control (general)

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- QAR 16.0 Quality Assurance records
- OG 4.2 Data reduction and reporting (general)
- OG 4.29 (Section 4.4.1, page 3) Ambient air sampling procedures
- OG 4.23 (Section 4.2) Identification of test equipment requiring calibration
- OG 4.25 Instrument maintenance
- OG 4.23 (Section 4.3) Equipment calibration

3.5.3 Sampling Activities

The sampling and analyses described in Section 2.

The Project Manager or Team Leader is responsible for determining that instructions are implemented, chain-of-custody is maintained, and sampling documents have been completed properly and are accounted for.

3.5.4 Laboratory Analyses

All of the samples collected for data acquisition, will be forwarded to assigned laboratories in the CLP. Appendix A contains contract and method detection limits, and surrogate spike recovery limits.

3.5.4.1 Analytical Procedures

The current scope of the Work Plan does not include laboratory services performed by NUS. When laboratory services are required, appropriate quality assurance requirements will be included.

The analytical procedures employed are determined by the specific analysis to be performed. Standard Operating Procedures (SOP) are generally used in environmental data collection. Most have received EPA approval as published in "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods". Additional suitable reference sources for analytical procedures are:

- Viar & Co., August 1982, "User Guide to the EPA Contract Laboratory Program" Prepared by Sample Management Office, Alexandria, Virginia.

- APHA 1981 "Standard Methods for the Examination of Water and Wastewater", (15th Edition) American Public Health Association, Washington, D. C.

- EPA, March, 1979, "Methods for Chemical Analysis of Water and Wastes"

QA/QC documents which generally describe the quality assurance aspects of laboratory activities are as follows:

- QAR 10.0, QAP 10.0 Analytical procedures
- OG 4.2 Data reduction and reporting
- OG 4.1 Internal QC checks
- QAR 9.0, QAP 9.2, QAP 9.1 Sample control

3.5.4.2 Internal Quality Control Checks

To maintain confidence in the results of laboratory analysis, quality control checks will be employed. Their specific usage is dependent upon the substances involved. All quality control checks employed are based upon nationally recognized procedures. During the project, procedures outlined by the EPA will be employed, as applicable.

The CLP User's Guide describes all quality control procedures used in contract laboratory operations. These procedures include the use of replicates, blanks, spiked samples, split samples, and surrogate samples.

The frequency of the quality control checks varies in accordance with the complexity of the measurement technique involved. Customarily, the laboratory performs one matrix spike and one duplicate sample analysis on each case of samples received or per 20 samples, whichever is more frequent.

Procedures for NUS QA review of analytical data have been prepared and are available for use, as described in the Operating Guidelines Manual.

NUS will verify that any subcontract laboratories employ a quality assurance program. Included in the laboratory quality assurance procedures will be the specific routine procedures used to assess data precision, accuracy, and completeness. They are similar to the above discussed quality assurance objectives and include techniques for data reduction and reporting, as well as internal quality control checks.

3.5.4.3 Detection Limits and Spike Recovery

Appendix A lists the detection limits and acceptable spike recoveries for the compounds analyzed routinely by the CLP laboratories. Please note that in the method detection limit table, the low level category refers to low concentration water samples, while the medium level category refers to low concentration soil samples and medium concentration soil samples. These detection limits and spike recovery results are expected of any laboratory analyzing samples taken at the Douglassville Disposal Site.

Surrogate spikes are added to all samples submitted for organic analysis. They are used for monitoring matrix effects and gross sample processing errors. Spike recoveries are a measure of the accuracy of the method.

The accuracy and detection limits of any compounds not on the Hazardous Substance List will be left to the discretion of the Contract Laboratory performing the analysis, but will be largely dependent on the sample matrix and the analytical method (see Section 3.5.4.1).

3.5.5 Health and Safety Monitoring

The ambient air at the site will be monitored as necessary to insure the health and safety of the Remedial Investigation teams and to evaluate public health and environmental risk. This will be accomplished using any or all of the following instruments:

1. Flame-Ionization Detection Organic Vapor Analyzer (OVA).
2. Photoionization Detection OVA.
3. Oxygen Meter.
4. Explosimeter.

The initial site reconnaissance will be used to establish the level of protection for breathing air and protective clothing based on OVM monitoring, explosimeter readings and oxygen content in ambient air. Finally, air samples may be collected for analysis to identify any volatile organics present on site.

Quality assurance requirements are generally described in the following QARs, QAPs, and OGs:

- OG 4.29 (Section 4.4.1, page 3) Ambient air monitoring
- OG 5.3 Decontamination procedures
- OG 4.23 Identification of test equipment requiring calibration
- OG 4.25 Instrument maintenance
- OG 4.23 Test equipment calibration specifics

See ambient air sampling (data acquisition) Section 3.5.3.5 for relevant QA documents.

The site-specific Health and Safety Plan integrates the sample and monitoring program into an overall task.

3.5.6 Product Quality Assurance

Since the product associated with the Remedial Investigation is the report which incorporates illustrations, drawings, photos and reproductions, some quality assurance requirements are necessary. In addition, control of the documents is an essential element of the development of a Remedial Investigation Report.

The following documents provide quality assurance guidance in the production of the Remedial Investigation Report:

- NUS Style Guide
- QAR 7.0 Document control
- QAP 7.1 Identification of Controlled Evidentiary documents
- QAP 7.2 Issuance and distribution of controlled documents
- QAP 7.4 Technical reports
- QAP 3.1 Control of design activities

3.6 Data Reduction, Validation, and Reporting

Data analysis will be based on logical and systematic procedures using acceptable engineering methods, and will be documented. Preliminary data analysis may be performed by one or more tester and, because of their preliminary nature, need only to be reviewed by a qualified individual. All preliminary analyses or calculations must be defined as such.

The source document status must be identified in any report, study, or calculation in which it is being used as input. Data analysis will be legible and in a form suitable for reproduction and filing. Analyses will be sufficiently detailed and in a format so that they may be reviewed or verified without recourse to the originator. The tester, subject, date, and specific data used in the analyses will be identified.

Data analysis will be reviewed by a qualified individual other than those performing the analysis. The method of analysis used will provide for the review and documentation of the consistency and defensibility of all references, technical concepts, methods, assumptions, calculations and conclusions. Proper documentation of the review is required.

3.7 Performance and Systems Audits

The effectiveness of quality assurance techniques and their implementation can be evaluated through audits. Project activities will be audited by the Manager of Quality Assurance and Security. The overall quality assurance program is audited periodically by other NUS organizations.

Audits are performed on the basis of written checklists or lists of questions prepared prior to the audit. During an audit, each item on the list is marked satisfactory, unsatisfactory, not applicable, or not audited.

Checklists will include such items as equipment calibration and maintenance, documentation, record keeping, reporting, chain-of-custody, standard operating procedures, non-conformances, and corrective actions.

Quarterly review of the CLP program, including analyses of standard samples and review of all laboratory documentation will be performed by EPA.

3.8 Corrective Action

Corrective actions will be described for each task, purchased item, service or procedure in the project for which non-conformances have been reported.

Corrective action required for other reasons, such as audit findings or significant non-conformances will be documented in accordance with the Project Quality Assurance Manual.

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3.9 Quality Assurance Reports to Management

Each month, the project Quality Assurance Representative shall forward to the Project Manager, the Zone Deputy Project Manager, and the Manager of Quality Assurance and Security a report summarizing the quality assurance and quality control status for the project and any conditions adverse to quality. Topics to be included in the monthly report are as follows:

- Assessment of data accuracy, precision, and completeness
- Results of any performance audits
- Results of system audits
- Any non-conformances initiated
- Any significant quality assurance problems, together with recommended solutions

The monthly reports will be compiled into quarterly and annual reports.

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APPENDICES

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APPENDIX A

DETECTION LIMITS AND SURROGATE SPIKE RECOVERY LIMITS

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TABLE A-1

HAZARDOUS SUBSTANCES LIST (HSL)*
AND METHOD DETECTION LIMITS**

	Parameter (ug/l)	Method No.	CAS #	Detection Limit: Medium Level ug/g or ug/ml	Detection Limit: Low Level ug/l
1.	acenaphthene	625	83-32-9	10	10
2.	acrolein	603,624	107-02-8	10	100
3.	acrylonitrile	603,624	107-13-1	10	100
4.	benzene	624	71-43-2	1	5
5.	benzidine	625	92-87-5	25	40
6.	carbon tetrachloride	624	56-23-5	1	5
7.	chlorobenzene	624	108-90-7	1	5
8.	1,2,4-trichlorobenzene	625	120-82-1	10	10
9.	hexachlorobenzene	625	118-74-1	10	10
10.	1,2-dichloroethane	624	107-06-2	1	1
11.	1,1,1-trichloroethane	624	71-55-6	1	5
12.	hexachloroethane	625	67-72-1	10	10
13.	1,1-dichloroethane	624	75-34-3	1	5
14.	1,1,2-trichloroethane	624	79-00-5	1	5
15.	1,1,2,2-tetrachloroethane	624	79-34-5	1	10
16.	chloroethane	624	75-00-3	1	10
17.	bis(2-chloroethyl)ether	625	111-44-4	10	10
18.	2-chloroethyl vinyl ether	624	110-75-8	1	10
19.	2-chloronaphthalene	625	91-58-7	10	10

*NOTE: Wherever the term "priority pollutant(s)" is used in this contract and in any references cited in this contract, it is intended to mean "Hazardous Substances List (HSL) Compound(s)," which include all compounds listed in this Exhibit.

**NOTE: Specific detection limits are highly matrix dependent. The detection limits listed herein are provided for guidance and may not always be achievable.

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TABLE A-1
HAZARDOUS SUBSTANCES LIST (HSL)*
AND METHOD DETECTION LIMITS**
PAGE TWO

	Parameter (ug/l)	Method No.	CAS #	Detection Limit: Medium Level ug/g or ug/ml	Detection Limit: Low Level ug/L
20.	2,4,6-trichlorophenol	625	88-06-2	10	10
21.	4-chloro-3-methyl phenol (para-chloro-meta-cresol)	625	59-50-7	20	10
22.	chloroform	624	67-66-3	1	5
23.	2-chlorophenol	625	95-57-8	10	10
24.	1,2-dichlorobenzene	625	95-50-1	10	10
25.	1,3-dichlorobenzene	625	541-73-1	10	10
26.	1,4-dichlorobenzene	625	106-46-7	10	10
27.	3,3'-dichlorobenzidine	625	91-94-1	10	20
28.	1,1-dichloroethene	624	75-35-4	1	5
29.	trans-1,2-dichloroethene	624	156-60-5	1	5
30.	2,4-dichlorophenol	625	120-83-2	10	10
31.	1,2-dichloropropane	625	78-87-5	1	10
32.	trans-1,3-dichloropropene	624	10061-02-6	1	5
33.	cis-1,3-dichloropropene	624	10061-01-05	1	5
34.	2,4-dimethylphenol	625	105-67-9	10	10
35.	2,4-dinitrotoluene	625	121-14-2	10	20
36.	2,6-dinitrotoluene	625	606-20-2	10	20
37.	1,2-diphenylhydrazine	625	122-66-7	10	20
38.	ethylbenzene	624	100-41-4	1	5
39.	fluoranthene	625	206-44-0	10	10
40.	4-chlorophenyl phenyl ether	625	7005-72-3	10	10
41.	4-bromophenyl phenyl ether	625	101-55-3	10	10
42.	bis(2-chloroisopropyl)ether	625	39638-32-9	10	20

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TABLE A-1
HAZARDOUS SUBSTANCES LIST (HSL)*
AND METHOD DETECTION LIMITS**
PAGE THREE

	Parameter (ug/l)	Method No.	CAS #	Detection Limit: Medium Level ug/g or ug/ml	Detection Limit: Low Level ug/L
43.	bis(2-chloroethoxy)-methane	625	111-91-1	10	20
44.	methylene chloride	624	75-09-2	1	5
45.	chloromethane	624	74-87-3	1	10
46.	bromomethane	624	74-83-9	1	10
47.	bromoform	624	75-25-2	1	10
48.	bromodichloromethane	624	75-27-4	1	5
51.	chlorodibromomethane	624	124-48-1	1	5
52.	hexachlorobutadiene	625	87-68-3	10	10
53.	hexachlorocyclopentadiene	625	77-47-4	10	10
54.	isophorone	625	78-59-1	10	10
55.	naphthalene	625	91-20-3	10	10
56.	nitrobenzene	625	98-95-3	10	10
57.	2-nitrophenol	625	88-75-5	10	20
58.	4-nitrophenol	625	100-02-7	90	50
59.	2,4-dinitrophenol	625	51-28-5	40	50
60.	4,6-dinitro-2-methylphenol	625	534-52-1	20	20
61.	N-nitrosodiphenylamine	625	86-30-6	10	10
62.	N-nitrosodipropylamine	625	621-64-7	10	10
63.	pentachlorophenol	625	87-86-5	25	10
64.	phenol	625	108-95-2	10	10
65.	bis(2-ethylhexyl)phthalate	625	117-81-7	10	10
66.	benzyl butyl phthalate	625	85-68-7	10	10

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TABLE A-1
HAZARDOUS SUBSTANCES LIST (HSL)*
AND METHOD DETECTION LIMITS**
PAGE FOUR

	Parameter (ug/l)	Method No.	CAS #	Detection Limit: Medium Level ug/g or ug/ml	Detection Limit: Low Level ug/L
67.	di-n-butyl phthalate	625	84-74-2	10	10
68.	di-n-octyl phthalate	625	117-84-0	10	10
69.	diethyl phthalate	625	84-66-2	10	10
70.	dimethyl phthalate	625	131-11-3	10	10
71.	benzo(a)anthracene	625	56-55-3	10	10
72.	benzo(a)pyrene	625	50-32-8	10	20
73.	benzo (b) fluoranthene	625	205-99-2	25	20
74.	benzo(k)fluoranthene	625	207-08-9	10	20
75.	chrysene	625	218-01-9	10	20
76.	acenaphthylene	625	208-96-8	10	10
77.	anthracene	625	120-12-7	10	10
78.	benzo(ghi)perylene	625	191-24-2	25	20
79.	fluorene	625	86-73-7	10	10
80.	phenanthrene	625	85-01-8	25	10
81.	dibenzo(ah)anthracene	625	53-70-3	25	20
82.	indeno(1,2,3-cd)pyrene	625	193-39-5	25	20
83.	pyrene	625	129-00-0	25	10
84.	tetrachloroethene	624	127-18-4	1	5
85.	toluene	624	108-88-3	1	5
86.	trichloroethene	624	79-01-6	1	5
87.	vinyl chloride	624	75-01-4	1	10
88.	2,3,7,8-tetrachlorodibenzo -p-dioxin	613	1746-01-6	0.1	.005
89.	aldrin	608,625*	309-00-2	0.1	.005

*Pesticides and PCB's are verified by Method 625 if detected at levels adequate for analysis by 625.

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TABLE A-1
HAZARDOUS SUBSTANCES LIST (HSL)*
AND METHOD DETECTION LIMITS**
PAGE FIVE

	Parameter (ug/l)	Method No.	CAS #	Detection Limit: Medium Level ug/g or ug/ml	Detection Limit: Low Level ug/L
90.	dieldrin	608,625*	60-57-1	0.1	.005
91.	chlordane	608,625*	57-74-9	0.1	.050
92.	4,4'-DDT	608,625*	50-29-3	0.1	.010
93.	4,4'-DDE	608,625*	72-55-9	0.1	.005
94.	4,4'-DDD	608,625*	72-54-8	0.1	.010
95.	endosulfan I	608,625*	115-29-7	0.1	.005
96.	endosulfan II	608,625*	115-29-7	0.1	.005
97.	endosulfan sulfate	608,625*	1031-07-8	0.1	.010
98.	endrin	608,625*	72-20-8	0.1	.005
99.	endrin aldehyd	608,625*	7421-93-4	0.1	.010
100.	heptachlor	608,625*	76-44-8	0.1	.005
101.	heptachlor eporide	608,625*	1024-57-3	0.1	.005
102.	a-BHC	608,625*	319-84-6	0.1	.005
103.	b-BHC	608,625*	319-85-7	0.1	.005
104.	d-BHC	608,625*	319-86-8	0.1	.005
105.	g-BHC (lindane)	608,625*	58-89-9	0.1	.005
106.	toxaphene	608,625*	8001-35-2	0.4	.050
107.	PCB-1016	608,625*	12674-11-2	0.1	.050
108.	PCB-1221	608,625*	11104-28-2	0.1	.100
109.	PCB-1232	608,625*	11141-16-5	0.1	.100
110.	PCB-1242	608,625*	53469-21-9	0.1	.050
111.	PCB-1248	608,625*	12672-29-6	0.1	.100
112.	PCB-1254	608,625*	11097-69-1	0.1	.100
113.	PCB-1260	608,625*	11096-82-5	0.1	.200

*Pesticides and PCB's are verified by Method 625 if detected at levels adequate for analysis by that method.

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TABLE A-1
HAZARDOUS SUBSTANCES LIST (HSL)*
AND METHOD DETECTION LIMITS**
PAGE SIX

Parameter (ug/l)	Method No.	CAS #	Detection Limit: Medium Level ug/g or ug/ml	Detection Limit: Low Level ug/L
114. acetone	624	67-64-1	1	5
115. aniline	625	62-53-3	1	5
116. benzoic acid	625	65-85-0	90	100
117. benzyl alcohol	625	100-51-6	10	20
118. 2-butanone	624	78-93-3	1	5
119. carbondisulfide	624	75-15-0	0.5	1
120. 4-chloroaniline	625	106-47-8	50	50
121. dibenzofuran	625	132-64-9	5	10
122. 2-hexanone	624	519-78-6	1	5
123. 2-methylnaphthalene	625	91-57-6	10	20
124. 4-methyl-2-pentanone	624	108-10-1	1	5
125. 2-methylphenol	625	95-48-7	1	5
126. 4-methylphenol	625	108-39-4	1	5
127. 2-nitroaniline	625	88-74-4	90	100
128. 3-nitroaniline	625	99-09-2	70	100
129. 4-nitroaniline	625	100-01-6	100	100
130. styrene	624	100-42-5	1	5
131. 2,4,5-trichlorophenol	625	95-95-4	100	100
132. vinyl acetate	624	108-05-4	1	5
133. o-xylene	624	95-47-6	1	5

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TABLE A-2

CONTRACT REQUIRED DETECTION LIMITS

Element	Drinking Water Criteria (ug/L)	Required Detection Limit (ug/L)
Aluminum	-	200*
Barium	1000	100
Beryllium	- (P)	5
Boron	-	100
Chromium	50 (P)	10
Colbalt	-	50
Copper	1000 (s)(P)	50
Iron	300 (s)	50
Manganese	50 (s)	15*
Nickel	- (P)	40
Silver	50 (P)	10
Vanadium	- (H)	200
Zinc	5000 (s)(P)	10
Antimony	- (P)	20
Arsenic	50 (P)	10
Cadmium	10 (P)	1
Lead	50 (P)	5
Mercury	2 (P)	0.2
Selenium	10 (P)	2
Thallium	- (P)	10
Tin	-	20
Ammonia	-	100
Cyanide	- (P)	10
Sulfide	50	50*

(s) Secondary water standard

(P) Priority pollutant

(H) Hazardous Constituent

*Detection limits of 100 ug/L, 10 ug/L, and 10 ug/L are desired for aluminum, manganese, and sulfide, respectively. The limits achieved must be documented as required in the QC Section of the Inorganic Analytical Protocol.

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TABLE A-3

SURROGATE SPIKE RECOVERY LIMITS

CONTRACT ACCEPTANCE LIMITS FOR THE PERCENT RECOVERY OF SURROGATE STANDARDS

Fraction	Surrogate	Water	Soil
Volatile	toluene - d_8	84-114	81-120
Acid	phenol - d_5	15-90	10-104
Acid	2-fluorophenol	25-115	26-116
Base/Neutral	nitrobenzene-d_5	42-131	19-115
Base/Neutral	2-fluorobiphenyl	50-134	17-125
Dioxin	1,2,3,4-TCDD	26-104	11-129

ADVISORY* LIMITS FOR ADDITIONAL SURROGATE STANDARDS - % RECOVERY

Fraction	Surrogate	Water	Soil
Volatile	1,2-dichloroethane-d_4	90-130	80-130
Volatile	4-bromofluorobenzene	63-127	37-137
Base/Neutral	terphenyl-d_{14}	54-118	34-126
Acid	2,4,6-tribromophenol	47-123	32-124
Pesticide	dibutylchlorendate	67-114	41-121

*These are advisory limits only. They are not to be used to determine if a sample should be reanalyzed. These limits can be used as an indication of whether or not to accept or reject data associated with these surrogate compounds.

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TABLE A-4

SPIKED SAMPLE RECOVERY LIMITS

Analysis Method	Inorganic Species	Percent of True Value (EPA Set) Low Limit	High Limit
ICP Spectroscopy	Aluminum	80	120
	Barium	80	120
	Beryllium	80	120
	Boron	80	120
	Chromium	80	120
	Cobalt	80	120
	Copper	80	120
	Iron	80	120
	Manganese	80	120
	Nickel	80	120
	Silver	80	120
	Vanadium	80	120
	Zinc	80	120
Atomic Absorption Spectrometry	Arsenic	75	125
	Antimony	75	125
	Cadmium	75	125
	Lead	75	125
	Mercury	75	135
	Selenium	75	135
	Thallium	75	125
	Tin	75	125
Other Inorganic Analyses	Ammonia	80	120
	Cyanide	80	120
	Sulfide	80	120

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APPENDIX B

GENERAL HEALTH AND SAFETY REQUIREMENTS

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APPENDIX B
CONTENTS

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TABLES

FIGURES

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1.0 INTRODUCTION

This health and safety plan is designed to establish safe procedures and practices for NUS and subcontractor personnel engaged in field activities at the Douglassville Disposal Site. The plan is based on limited information available concerning possible contaminants and physical hazards found on site. As more data concerning the nature and concentrations of contaminants becomes available, the health and safety plan will be modified accordingly. These modifications will appear in the task-specific health and safety plans required for each field investigation.

2.0 BACKGROUND INFORMATION

The Douglassville Disposal Site consists of approximately 50 acres and is located along Highway 724 just west of Douglassville, Pennsylvania, on the southern bank of the Schuylkill River. The facility consists of a waste oil processing operation and an adjoining series of backfilled lagoons. The processing facility includes office buildings, a garage, a water treatment system, a former drum storage area, and an oil/water separator which is located south of the railroad track. The site covered by the subsurface investigation is north of the track. It is a relatively flat, cleared area that was used for waste settling. This area included waste lagoons, impoundments, and trenches at various times in the past. The lagoons were drained and backfilled in 1972 after a flood during Hurricane Agnes. Remnants of these lagoons now occupy the site.

The site has been owned and operated by Berks Associates, Inc., ever since the facility began operation in 1941. In 1941, the facility began producing recycled lubrication oil. Waste generated from the recycling process was stored in two lagoons on site. The firm changed its operation and began processing of recycled waste oil for use as industrial boiler fuel in 1979. The oily waste sludge from this new recycling process was landfarmed in the northwest sector of the site. Landfarming operations halted in 1981.

Also, at one point, approximately 25,000 gallons of solvent-type liquid was stored on site in a 250,000-gallon tank. This liquid was eventually evaporated from the tank by the site owner during the summer of 1983. A sludge residue may remain in the storage tank.

Air monitoring has been performed several times at the site during preliminary site visits to establish personnel respiratory protection levels. Available data show no hazardous organic vapor concentrations.

3.0 HAZARD EVALUATION

The overall hazard of the Douglassville Disposal Site from an onsite worker health and safety standpoint is low. The health and safety reconnaissance conducted in April 1984 disclosed no organic gas and vapor concentrations above background using a Foxboro Organic Vapor Analyzer.

Available analytical data indicates low levels of contamination in site soils and surface water. The most heavily contaminated area on site appears to be the facility discharge. This area is found in the southeast corner of the site. The discharge follows a small onsite stream and empties into the Schuylkill river. Those contaminants found in the discharge which are of major concern include trichloroethylene 367 parts per billion (ppb), 1,1,1, trichloroethane (40 ppb), toluene (70 ppb), and 1,2-trans-dichloroethylene.

In addition to the facility discharge, the drainage swale area located in the northwest corner of the site shows measurable contamination. PCB-1254 and PCB-1260 were detected at levels of 86 ppb and 190 ppb respectively.

Heavy metals were also reported in high concentrations in the two areas mentioned above. This type of contamination is to be expected because of the use of lubricating oils.

Section 6.0 of this Health and Safety Plan contains the available information on organic and metal contaminants found during a sampling task performed on April 20, 1982 by FIT III.

Based on this information the potential for skin contact and possible adsorption of toxic chemicals from contaminated ground and surface waters as well as soils exists. Therefore, personal protective equipment, in the form of protective boots, chemically resistant coveralls, and protective gloves will be required.

A radiation survey has also been conducted on the Douglassville Disposal Site. This standard survey is performed to assure that no radioactive materials have been disposed of on the site. Readings obtained during this survey were well within natural background levels (0.01-0.03 milli REMS per hour). These levels are well below occupational and environmental standards.

4.0 PERSONNEL HEALTH EXAMINATIONS

All personnel working on the Douglassville Disposal Site must have a current medical certificate. NUS employees are required to participate in the corporate medical monitoring program in order to perform field activities. Subcontractors and NUS employees other than PEC Division employees are also required to obtain a certificate of ability to perform their assigned task from a physician. The NUS medical consultants (University of Pittsburgh) will make the final review of all NUS medical records to determine if additional testing is required.

NUS will provide site background information for the physician's use. The physician will set the requirements for physical condition of the worker's with respect to their ability to perform their assigned tasks. The physician will also determine the ability of the individual to wear respiratory protection during the performance of work. A copy of the medical certificate must be sent to the Project Manager for inclusion in the project files prior to work start-up.

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5.0 PHYSICAL HAZARDS

All field activities have certain inherent physical hazards associated with them. Those that appear to apply to the Douglassville Site include:

- Holes and pits with standing water
- Thick brush north of the railroad tracks
- Old tank truck located on the site
- Open trenches used for wastewater treatment
- Schuylkill River is located adjacent to the site
- Poisonous plants such as ivy, sumac, and oak may be present
- Since most of the field work is scheduled for the summer months, heat stress should always be considered a potential problem.
- Snakes are a possible onsite danger as are bees, fleas, and other small nuisance insects.

6.0 CHEMICAL HAZARDS

The following tables illustrate the chemicals known to be found on site as well as their locations. Also, included is toxicological data on the compounds. As more information becomes available during the Remedial Investigation (RI), this section will be updated. This update will be found in the task-specific health and safety plans required for all site work.

TABLE 6-1

ORGANIC COMPOUNDS DETECTED IN SAMPLES
COLLECTED BY FIT REGION III ON APRIL 20, 1982

Organics	Sample: Facility Well	Richards Well	Facility Discharge[a]	Schuylkill River Upstream	Schuylkill River Downstream	Drainage Swale Soil
Methylene chloride	ND	ND	69	ND	ND	ND
Phenol	ND	ND	8	ND	ND	ND
Pyrene	ND	ND	ND	ND	ND	ND
PCB-1254	ND	ND	ND	ND	ND	86
PCB-1260	ND	ND	ND	ND	ND	190
1,1,1-Trichloroethane	5	ND	40	ND	ND	ND
1,2-Trans-dichloroethylene	22	ND	33	ND	ND	ND
Trichloroethylene	12	ND	367	ND	ND	ND
p-chloro-m-cresol	ND	ND	2	ND	ND	ND
Naphthalene	ND	ND	5	ND	ND	ND
Benzene	ND	ND	11	ND	ND	ND
Ethyl benzene	ND	ND	8	ND	ND	ND
Toluene	ND	ND	70	ND	ND	ND

Results in ppb.
ND: Not detected.
(a): aqueous sample

A complete Priority Organic Pollutant scan was performed; no other organics were detected above detection limits. Soil blank contained 23 ppb methylene chloride. No organics were detected in aqueous blank.

TABLE 6-2

METALS DETECTED IN SAMPLES COLLECTED
BY FIT REGION III ON APRIL 20, 1982

Metals	Sample					
	Facility Well	Richards Well	Facility Discharge[a]	Schuylkill River Upstream	Schuylkill River Downstream	Drainage Swale Soil
Aluminum	ND	ND	550	ND	ND	800×10^3
Barium	ND	150	ND	150	ND	150×10^3
Chromium	ND	130	ND	21	ND	ND
Copper	ND	17	ND	ND	ND	1×10^4
Iron	100	140	1200	350	330	13×10^5
Manganese	ND	ND	200	320	340	190×10^3
Zinc	50	61	100	79	50	44×10^3
Cadmium	ND	ND	ND	ND	ND	100
Lead	ND	ND	ND	ND	ND	570×10^3

Results in ppb.

ND: Not detected.

(a): aqueous sample

TABLE 6-3

TOXICITY DATA FOR SUBSTANCES
IDENTIFIED ONSITE

		Toxicity (LD50s)			
	RTECS No.	Inhalation (mg/m^3)	Oral (mg/kg)	Dermal (mg/kg)	Subcutaneous (mg/kg)
Benzene	CY1400000 CARC	10 ppm OSHA	3800 rat	1200 rat	TD_{50} 600 mus
Methylene chloride	PA8050000	500 ppm OSHA	167 rat	*	6,460 mus
Phenol	SJ3325000	*	414 rat	850 rbt	344 mus
PCB-1254	TQ1360000	0.5 OSHA	1,295 rat	*	2,840 ipr-mus
PCB-1260	TQ1362000	*	1,315 rat	*	*
1,1,1-Trichloroethane	KJ2975000	350 ppm OSHA	10,300 rat	*	3,100 ipr-dog
1,2-trans-Dichloroethylene	KV9400000	*	*	*	7,536 ipr-rat
Trichloroethylene	KX4550000	*	4,920 rat	*	1,900 ipr-dog
Aluminum	BD0330000	*	*	*	*
Barium	*	Irritant	Irritant	Irritant	*
Chromium	GB4200000 CARC**	1 OSHA	*	*	*
Copper	GL5325000	*	*	*	*
Iron	*	*	*	*	*
Manganese	009275000	5 OSHA	*	*	*
Zinc	ZG8600000	*	*	*	*
Cadmium	EU9800000 CARC**	0.2 OSHA	225 rat	*	9 rat
Lead	0F7525000	0.050 OSHA	450 hmn	*	1,000 ipr-rat
p-chloro-m-cresol	G07100000		LD_{Lo} 500 rat		400 rat
Naphthalene	QJ0525000	10 ppm OSHA	1780 rat		TD_{Lo} 3500 rat
Ethyl benzene	DA0700000	100 ppm OSHA	3,500 rat	5,000 rbt	
Toluene	XS5250000	200 ppm OSHA	5,000 rat	1,400 rbt	

TABLE 6-3
TOXICITY DATA FOR SUBSTANCES
IDENTIFIED ONSITE
PAGE TWO

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ppm	- parts per million
mg/kg	- milligrams per kilogram of body weight
*	- no data found
**	- Chromium and Cadmium are considered carcinogens in the context of occupational exposure only for the purposes of this table.
TD_{Lo}	- lowest toxic dose
TD_{50}	- toxic dose for 50 percent of test animals
LD_{50}	- lethal dose for 50 percent of test animals
ipr	- interperitoneal
hmn	- human
mus	- mouse
dog	- dog
CARC	- carcinogen
mg/m^3	- milligrams per cubic meter of air
OSHA	- Occupational Safety and Health Administration Standard
rat	- rat
rbt	- rabbit
RTECS No.	- Registry of Toxic Effects of Chemical Substances

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TABLE 6-4

RESPIRATORY PROTECTION INFORMATION
ON CHEMICALS FOUND ON SITE

Compound	PEL	TLV	IDLH
Methylene Chloride	500 ppm	100 ppm	5000 ppm
Phenol	5 ppm	5 ppm	100 ppm
Pyrene	NA	NA	NA
PCB-1254	0.5 mg/m^3	0.5 mg/m^3	10 mg/m^3
PCB-1260	NA	NA	10 mg/m^3
1,1,1-Trichloroethane	350 ppm	350 ppm	1000 ppm
1,2-Trans-dichloroethylene	200 ppm	200 ppm	4000 ppm
Trichloroethylene	100 ppm	50 ppm	1000 ppm
p-chloro-n-cresol	NA	NA	NA
Napthalene	10 ppm	10 ppm	500 ppm
Benzene	10 ppm	10 ppm	2000 ppm
Ethyl benzene	100 ppm	100 ppm	2000 ppm
Toluene	200 ppm	100 ppm	2000 ppm

ppm	parts per million
mg/m^3	milligrams per liter
PEL	Permissible Exposure Limit
TLV	Threshold Limit Value
NA	Not available
IDLH	Immediately dangerous to life & health

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7.0 OPERATING PROCEDURES

All site investigation activities will use Standard Operating Procedures (SOPs) which will require specified levels of safety protection. SOPs for field activities are described in the Site-Specific Quality Assurance Requirements.

The following requirements are to be applied to all of the field activities implemented at the Douglassville Disposal Site.

- Smoking, eating, and drinking are not permitted while on the Douglassville Disposal Site.
- No flames or fires are permitted on the Douglassville Disposal Site.
- All project personnel handling any samples or who may be exposed to potential toxic materials must satisfy medical requirements before commencing work.
- All project personnel must undergo training as specified, before commencing work.
- All project personnel must inform the team leader before entering the hazardous waste site.
- All project personnel which may require the use of respiratory protection must be clean shaven.
- Any individual taking medication of any kind must notify the Site Safety Officer.
- Upon leaving the exclusion zone, hands and face must be washed.
- Always avoid contact with potentially contaminated substances. Always avoid placing any equipment directly on the ground.

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8.0 PERSONAL PROTECTIVE EQUIPMENT

Site investigations are expected to be performed using TyveK P.E. coveralls, butyl rubber boot covers, butyl rubber outer gloves and surgical inner gloves. This protection is designed mainly to protect against possible PCB contamination.

In addition to the above dermal protection, eye and face protection in the form of splash shields must be used during any sampling task which may produce accidental splashing.

Respiratory protection will be specified in the event that concentrations of volatile organic compounds are detected during the implementation of field operations. Different types of protection from organic vapors are available, namely air-purifying respirators and supplied-air respirators.

Based on the available data for the site, any organic reading above 5 parts per million in the breathing zone will require worker retreat and/or work stoppage until the contaminants can be identified. The identification will be performed using the specified dermal protection for the task with the addition of a self-contained breathing apparatus (SCBA). This type of protection is required until the contaminants can be identified and the best method of respiratory protection is selected by the Site Safety Officer.

The identification process will include the use of various colorimetric indicator tubes. The specific tubes of interest during operations at the Douglassville Site include the following:

- Tolune 5/a
- Trichloroethylene 2/a
- Benzene 0.5/a
- Ethyl Benzene 30/a
- Phenol 5/a
- Polytest
- Ethyl Acetate 200/a

- Methyl Bromide 5/b
- Hydrazine 0.25/a
- Acetone 200/b
- Alcohol 100/a
- Hydrocarbon 0.1%/b
- Formic Acid 2/a
- Carbon Monoxide 10/b

The Site Safety Officer will use the information gained through the air monitoring and compare it to Occupational Safety and Health Administration (OSHA) Permissable Exposure Limits (PEL's) and American Conference of Governmental Industrial Hygienists (ACGIH) Threshold Limit Values (TLV's) in order to prescribe the proper respiratory protection. Any values which exceed the PEL's or TLV's will require some form of respiratory protection. Full facepiece chemical cartridge respirators (MSA ULTRA-TWIN) equipped with organic vapor cartridges (MSA GMC) may be used if the contaminants are qualitatively and quantitatively identified. Additionally, the concentrations must be below their respective Immediately Dangerous to Life and Health (IDLH) value in order to use the chemical cartridge respirators. The TLV's and IDLH values for those compounds identified on site may be found in Table 6-4. Further limits on the use of the Ultra-Twin respirators include:

- A good face to mask seal can be achieved
- Organic vapor concentration is less than the equipment's Maximum Use Limitation
- Chemical breakthrough - data on the compound is available
- At least 19.5 percent oxygen, by volume, is present in the work area

Self-Contained Breathing Apparatus (SCBA's) will be required when elevated levels of organic vapors are detected using real-time air monitoring equipment but not identified and quantified using colorimeteric tubes. This level of protection will

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also be necessary when any of the previous criterion for using Ultra-Twin respirators are not met.

The action levels described above pertain to level C respiratory protection (ULTRA-TWINS) and level B respiratory protection (SCBA). In the highly unlikely event of a major release of contaminants, level A protection may be needed to perform some type of emergency work. This is not expected to occur during field operations activities but must be planned for in advance. This type of protection would include a totally encapsulated suit, SCBA, inner and outer butyl gloves and butyl rubber boots. This protection will be necessary in the event that contaminant concentration is found to be above 100 ppm and no identification can be made. One hundred ppm is selected based on the lowest IDLH value for those chemicals known to be on site.

Personal protective equipment for the decontamination crew will be identical to that of the sampling or operations crew during all activities at the Douglassville Disposal Site. However, eye protection will always be required when going through or helping operate the decontamination line.

9.0 FIELD OPERATIONS WORK AREA

To reduce the possibility of offsite transfer of contaminants which may be present on personnel and equipment, a site access control system and daily decontamination will be implemented under the direction of the Project Manager and the Site Safety Officer. Specific procedures and equipment necessary for decontamination will be detailed in the task-specific health and safety plans. In general, decontamination will be accomplished by going thru a boot cover and glove wash using a detergent and water solution. The wash will be followed by a clean water rinse.

Because of the nature of the operation performed at the site, it may become necessary to remove oily material from the protective clothing. Commerically available products such as Grease Relief may prove very helpful in this situation.

All equipment used for samples, as well as the sample containers, will also have to undergo decontamination. This will be accomplished by using the same type of detergent and water solution and clean water rinse as used in the personnel decontamination. No equipment or samples will be allowed to pass the hotline until going thru this process.

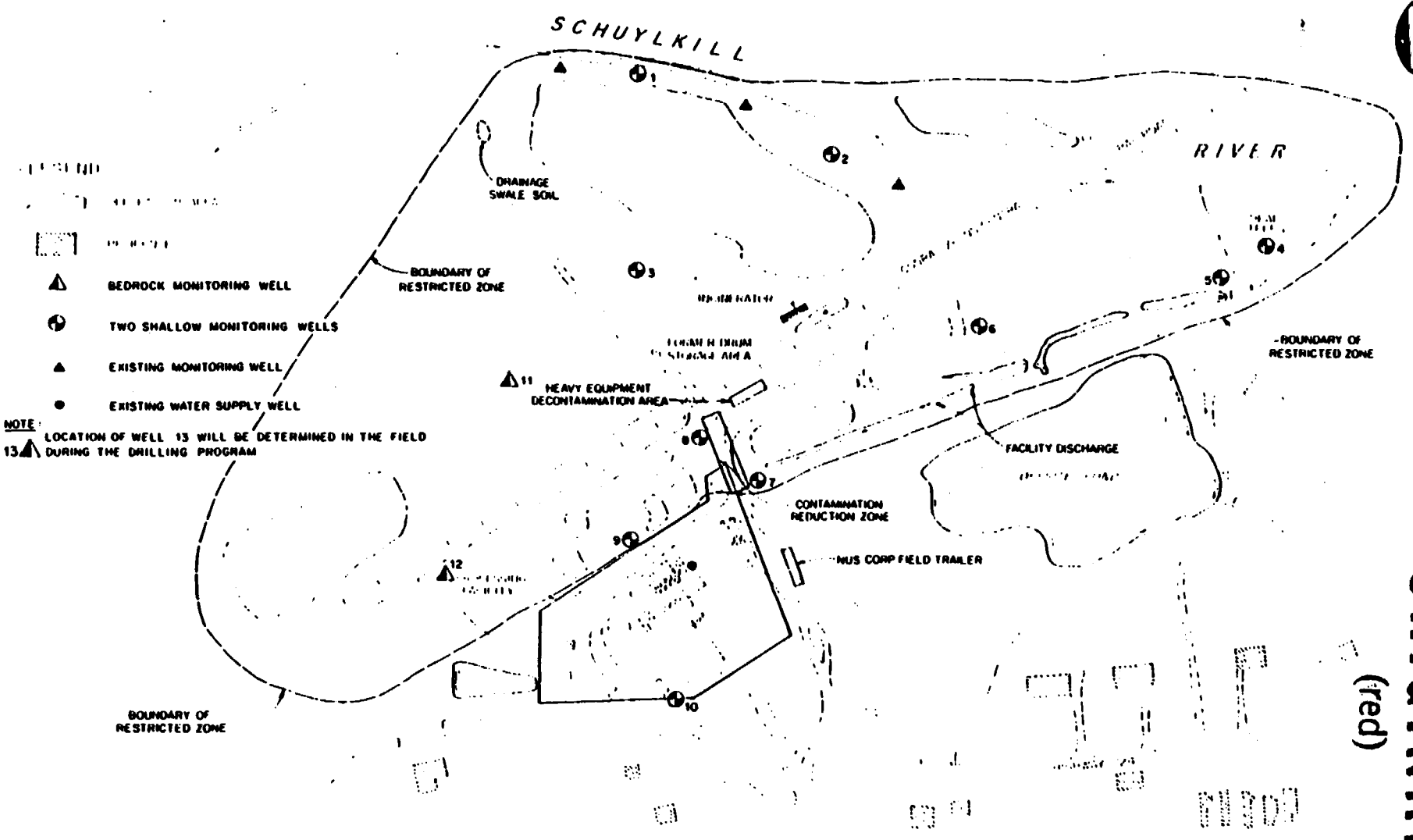
Vehicles and heavy equipment which must access the restricted zones will have to go thru decontamination. Drill rigs and other machinery coming in direct contact with potentially contaminated groundwater or lagoon sludge will be decontaminated by either high pressure hot water or steam. Both techniques will require the collection of the decontaminating solution so that proper disposal can be arranged. A separate access control system for vehicles and heavy equipment will be developed to prevent cross-contaminating the personnel access control system.

Vehicles which must access the site but do not come in direct contact with contaminated materials (groundwater, leachate, facility discharge) must be cleaned weekly to prevent accumulation of site soils within the car. This weekly cleaning will include a thorough vacuuming of the interior and a high pressure wash of the exterior.

Figure 9-1 shows the existing facility, proposed monitoring wells, existing monitoring wells, and points of interest on the site. Also included is a layout for the site trailer and contamination reduction zones. The restricted zone for field work will include all areas of the site north of the production facility. Proper protective equipment for personnel will be required when entering this area.

10.0 TRAINING

NUS provides training geared to the level of health and safety protection and type of activity performed on site at no charge in our Pittsburgh, PA Office and/or another convenient location. Attendance time, travel, and living expense for subcontractor employees is at the subcontractor's expense.



FIELD OPERATIONS WORK AREA
DOUGLASSVILLE DISPOSAL SITE, UNION TWP., PA
SCALE 1" = 200' APPROX

FIGURE 9-1

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A Halliburton Company

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All subcontractor personnel must attend a training session prior to the worker's going on site. The training will consist of:

- Basic chemistry and toxicology
- Work assignments and responsibilities
- Emergency provisions
- Communications setup
- Decontamination procedures
- Types of chemicals present on site and their effects
- Operational practices and protective requirements
- Respiratory protection

NUS personnel must also satisfy training requirements prior to going on site. Those which are mandatory include the introductory class, and a respiratory protection refresher class once every six months. Optional training which may or may not be necessary includes:

- First-aid - one team member must be certified
- CPR - one team member must be certified
- Sampling - team members with sampling responsibilities must complete this course
- Special Training - this refers to the use of special equipment or techniques which must be used during a task.

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11.0 ACCIDENT PROCEDURES

The following telephone numbers can be used to obtain professional help:

Ambulance	Douglassville VFD	367-2500
Hospital	Pottstown Hospital 1600 E. High Street	327-7100
Police	Douglassville	367-2500
Fire	Douglassville VFD	367-2500
Nearest Phone	Located at the oil recycling facility	
REMPO	Pittsburgh, PA	(412) 788-1080

If physical injury or accidental exposure (inhalation or skin contact) to a hazardous waste occurs:

- Remove the injured or exposed person(s) from immediate danger.
- Render necessary first aid:
  - CPR/artificial respiration
  - Treatment for shock
  - Treatment for bleeding
- Decontaminate affected personnel if required.
- Call AMBULANCE for transport to local hospital. <u>This procedure should be followed even if there is no apparent serious injury.</u>
- Evacuate other personnel on site to a safe place until the Project Manager (assisted by the Site Safety Officer) determines that it is safe for work to resume.
- Follow emergency physician access plan (see Attachment I).

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- Report the accident to the Site Safety Officer, PEC Division Manager, and PEC Health Sciences Department Manager immediately.

- Develop safe operating procedures to prevent a recurrance.

- File incident report with Health and Safety Department in Pittsburgh, PA.

Directions to the Pottstown Hospital are as follows:

Take state route 724 east to US route 422. Take US 422 to Pottstown exit.

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ATTACHMENT I

EMERGENCY PHYSICIAN ACCESS PLAN
NUS CORPORATION, SUPERFUND DIVISION

A. MONDAY THROUGH FRIDAY, 9:00 A.M. - 5:00 P.M.

Dial the (412) 624-0127 number. When answered state that:

(1) you are calling from NUS Corporation;
(2) this is an emergency call.

Program staff will be alerted how to contact the physician designated to provide emergency coverage on that day. Collect calls will be accepted.

B. EVENINGS, WEEK-ENDS & HOLIDAYS:

Dial the (412) 624-0127 number. An operator from the answering service will answer the telephone. Do the following:

(1) tell the operator that you are calling from NUS Corporation
(2) tell the operator that this is an emergency call
(3) give her your name
(4) give her the telephone number where the physician is to call. Be certain that she has written the correct number (area code and seven digits)
(5) if you do not receive a call back within 15 minutes place a second call to (412) 624-0127

Collect calls will be accepted.

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C. SITUATIONS WHERE EMPLOYEE REQUIRES IMMEDIATE TRANSPORT TO A HOSPITAL:

If the situation is life-threatening, i.e., cardiac arrest or person not breathing, call the emergency medical services system and transport the person to the nearest hospital with advanced life support capabilities.

After obtaining assistance as stated above, call the (412) 624-0127 number and follow the procedures in A or B as appropriate.